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AMENDMENTS TO THE CLAIMS

Please amend the claims as follows:

1. (Cancelled)
2. (Previously presented) In a Multiple-Input Multiple-Output Orthogonal Frequency Divisional Multiplexing (MIMO-OFDM) system, a method for estimating a sampling frequency offset, comprising:
 - inserting a matrix of pilot tones in at least two matrices of blocks of data;
 - receiving the matrices of blocks of data with the matrix of pilot tones;
 - comparing the matrix of pilot tones of one of the received matrices of blocks of data with another matrix of another of the received matrices of blocks of data to obtain a result; and estimating the sampling frequency offset of the system based on the result of the comparison.
3. (Previously presented) The method of Claim 2, wherein structure of the matrix of pilot tones is determined by a shift register generating the matrix of pilot tones.
4. (Previously presented) The method of Claim 2, wherein the matrix of pilot tones comprises an orthogonal matrix structure.
- 5.-6. (Cancelled)

7. (Previously presented) The method of Claim 2, further comprising:
passing the estimated sampling frequency offset through a phase locked loop.
8. (Previously presented) The method of Claim 2, further comprising:
passing the estimated sampling frequency offset through an exponential averaging circuit.
9. (Previously presented) The method of Claim 2, further comprising:
calculating a correction matrix using the estimated sampling frequency offset; and
multiplying the received matrices of blocks of data by the correction matrix to undo the effect of offset.
10. (Previously presented) The method of Claim 2, wherein estimating the sampling frequency offset comprises estimating the sampling frequency offset of the system based on the result of the comparison to obtain an initial sampling frequency offset and then multiplying the initial sampling frequency offset by a factor to obtain the estimated sampling frequency offset.
11. (Previously presented) The method of Claim 2, wherein estimating a sample frequency offset further comprises:

repeatedly comparing the matrix of pilot tones of the received matrices of blocks of data to obtain multiple results;

performing a least squares estimation on the multiple results; and

estimating the sample frequency offset of the system based on the multiple results.

12. (Previously presented) The method of Claim 2, further comprising:

multiplying a conjugate transpose of the matrix of pilot tones of the one of the received matrices of blocks of data with another matrix of pilot tones of another received matrix of blocks of data to determine a matrix correlation; and

calculating an angle of a trace of the matrix correlation.

13. (Previously presented) The method of Claim 12, further comprising:

finding a phase compensation term based on a difference in sign between the matrix of pilot tones of the one of the receives matrices of blocks of data with another matrix of pilot tones of another received matrix of blocks of data.

14.-20. (Cancelled)